**APRIL, 1928**

# ENTOMOLOGICAL NEWS

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CHARLES ROBERT OSTEN SACKEN,
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Communications on observations made in the course of your studies are solicited; also exhibits of any specimens you consider of interest.

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# ENTOMOLOGICAL NEWS

VOL. XXXIX APRIL, 1928 No. 4

## Evolution, Classification, Etc. (Lepid., Rhopalocera).

By J. D. GUNDER, Pasadena, California.

(PLATE II)

N. D. Riley of the British Museum has said in substance, *"Any scale of classification for Lepidoptera should be a scale of convenience and it should also be approximately natural."*

To be CONVENIENT such a scale should consist of terms whose continuity of definitions each express for themselves, an individuality of rank or grade on the scale for the specimens to be described. For example, "var. nov.," "ab. nov.," etc., when used in formal description **do not** indicate a located status or give to the specimens described, a classified conception in the minds of systematic entomological readers. Such terms are "conversational words" and have too broad and general a meaning to be employed for specific purposes. These and some other vaguely used terms of classification (as subspecies is sometimes used) should feel the hand of synonymy as well as occasionally the insects for which they stand. The mixing-in or indiscreet use of one or several general terms within a single description is also and always a source of much confusion. I cite a quaint example or (cross-word puzzle)—

*This VARIETY was bred at——in the woodshed near my barn and should prove to be a valid RACE, which I will call ——SUBSPECIES nov., though it has all the ear-marks of an ABERRATION; but I cannot place it among those FORMS, because the SPECIES already has some doubtful INDIVIDUAL FORMS which to me look like LOCAL RACES. I for one, deplore the naming of SPORTS, and especially FREAKS. Sorry I cannot figure the type as my barn burned down last weekend. I certainly lost a beautifully marked and valuable horse.*

A scale of convenience can be arrived at if British and American lepidopterists can get together. We are not far

apart. More discussion or impersonal treatises upon the subject should appear in American journals, however, like those being printed in the *Entomologist's Record* of London.

To be approximately NATURAL in classification means that nomenclature will eventually have to recognize the element of time in any scheme of its declension. To do this, the fact of a "beginning," as well as of an "end" has to be taken into consideration; in other words, the "start" of a species or "that evidence of a source of a species" is just as important as a matter of classified record on a scale, as is the constant or "finished" species itself. Also it is just as important and deserving of consideration as is any recognized middle subdivision thereof. Some zoologists consider any data relative to origin as of paramount importance. This article deals mostly with the inception, or the beginning, of a species as far as it concerns Rhopalocera.

In almost every constant group of butterflies, excepting those evidently long acclimated to some flat equatorial regions, there occasionally appear specimens whose wing designs or colors differ from the normal run of their kind and also from each other with persistent coextensive diversity. These are called transition forms (transient from near typical to definitely limited variation away from typical parental type) and for convenience of classification, they are divided into two main groups, those showing change of color and those having change of pattern. A further subdivision of the above is made based upon color sequence. (See ENT. NEWS, May, 1927, and Nov. 1927.) The biological value of these transition forms, which are somewhat rare in most collections, will be more generally understood when future lists and publications put them through taxonomic revision into eventual systematic order.

These interesting variations occur either plentifully or seldom in a species according to the amount of pressure nature is exerting for change upon their particular habitat. Should a butterfly colony exist under a long and more or less settled environment, it feels no immediate need of further development; but should the climatic or geographic area of its range or portions of its range be altered, then this change is grad-

ually reflected upon the wing colors and patterns of the more susceptible individuals of that colony or those portions of it. In other words these particularly susceptible and conductive examples in a group have retained in their being a suppressed inertia, apparently latent and hereditarily deficient from a former cycle of deviation, which when liberated by timely external inducement, finds renewed expression by either expanding or contracting wing design or by alternating sequence of existing wing color. These primarily modified specimens then breed through the generations and, by the law of averages, increase the ratio of receptive progeny and eventually all of the affected group undergoing change, takes on and permanently adopts the salient traits of the specific character deviation of its original and most dominant transition form. If this transition be progressive or futuristic, then that style dominates; if the tendency is retrogressive or atavistic, then that influence takes the lead. To dominate of course, means that many more of one kind than of the other shall exist and propagate to force an average of their style upon their kind. In this manner, if time and surroundings allow, first the initiative local forms segregate and later the pure races are founded which digress laterally, for example, more and more from their original parental stock, existing either nearby or far-away according to the area of the geographically intrusive wedge or climatically modified intersection. With independent and virginal isolation may come structural variation probably forced primarily by a maximum density of previous development and evinced by venational or genitalic differences. As these attain constancy, the group can no longer be considered in the light of an atypical marked race only, but has advanced on the classification scale to the rank of species. Thus the cycle by consistent development in point of time is completed; beginning with the meager evidence of dominant TRANSITION FORMS (first); making, may I say, an associated plurality of contiguous local FORMS[1] (second); which eventually separate

[1] In America thus far, we have confined the term "Local Form" to mean a majority assemblage within a race or a species and occupying an altitudinal or confined desert area, the confines of which are NOT well marked. The confines of a "race" ARE well marked, being geographical and as a rule separate.

into geographical RACES (third); and then through attainment of some constant physical character become SPECIES (fourth).

The wings of variant-group butterflies and particularly those of transition form butterflies may be likened to delicate barometers and the interesting and unusual fact about them is that in the living species, they not only record their immediate PAST, but also forecast the patterns of their wings for the FUTURE. I believe in no other order of insects, or for that matter in no other animal organism, is it possible to find, so OBVIOUSLY APPARENT, the equivalent of such dual evolutionary tendencies.

Regarding one of the many causes for the extinction of a species, I believe, though it is only a surmise, that if a species is over-long constant, it entirely loses susceptibility or loses those reactive individuals of quota necessary in its midst to rejuvenation under new conditions and therefore with no medium, there can be no survival.

Many species of butterflies have a complicated wing pattern. This should denote an older existence; however in most cases, I believe it is only the result of a more varied existence.

Rarely is there a long cycle poise in a temperate or variable zone species without the occurrence of transition form individuals which goes to prove that the order Lepidoptera is of fairly recent origin and compared to Coleoptera for example, which is an older order, has not achieved that equilibrium of maturity with immunity to the Earth's more commonly recurrent and somewhat adverse periods.

Many entomologists are continually raising or breeding various species of butterflies, subjecting their larvae to unusually cool or extra warm temperatures with the idea of producing quickly at home by artificial means what would take much time and energy in the field to find and collect under natural conditions. Many of these experimenters have thought that Nature's course could be altered by special breeding processes and that something new or of radically different design could be evolved; but this has never been found to be the case, as everything which is man-made invariably corresponds to those at sometime collected under natural conditions and *vice versa*. Breeders are often disappointed and discouraged when their

batches of "treated" larvae fail to produce anything but typical examples. They should bear in mind that no amount of "treatment" will make well marked transition forms in a prime generation unless the inherited taint of receptivity happens to be present. If they are lucky enough to procure among their original outside stock some having this invisible strain, then their experiments will be just that successful in point of numbers and no more.

Plate II accompanying this article is labeled "Evolution: a discernible cause and effect," for the reason that ancient transition forms, similar to those shown on each side of the illustrated species, have been the apparent medium of producing the divergent races shown just below them. The pictures well portray what is meant by transition forms "forcing an average of their style (salient traits) upon their kind." Progressive tr. forms are, as a rule, larger specimens than their retrogressive brothers; this may indicate then, a slightly larger species in the future. The plate shows progressive tr. f. *fusimacula* Barnes on the left and retrogressive tr. f. *mariana* Barnes on the right. From a biological stand-point, the determination of the progressive trend has more significance, as it sets the pace for the future species. The reason I have chosen one of the *Nymphalinae* as a graphic example is because I have at hand more original photographic material to select from in this group, so far as transition specimens and related races are available; for that matter, one of the *Asciidae* or *Hesperioidea* would suit the purpose just as well, but a few "missing links" would have to be filled in until such time in the future when more material is found. The habitation of *Euphydryas chalcedona* D. & H. around the San Francisco Bay region and just to the south is considered very old, both botanically and geographically; also *chalcedona* happens to be the first named, though that is beside the question; so, I see no particular reason why this species cannot be considered, in the light of our present knowledge, as the parental root of this West Coast group. The point of prime species, versus closely related races now listed as species, will undoubtedly form the basis of some discussion in the future; however,

constancy of genitalia, plus limited range of maculation variation within a congenial area obviously older botanically should establish a primitive species among any related butterflies.

Dr. Verity, of Florence, Italy, is at present concluding a survey of Rhopaloceran deviation in Europe. In a recent communication, he calls his work "a study of the geographical variations." I wish to compliment the Doctor upon his worthy and difficult undertaking. There may be some dissatisfaction regarding those of his new names which represent specimens whose type localities do not call for the rank of "race nov." If the data of his original descriptions cannot save his names, due to lack of details (and brevity in this regard is hardly an excuse), then comparative illustrations—showing species with race, holotype material only, is the best way to settle a temporary argument. Future or contemporary students, having collected impartially over areas representing names under dispute, will be better able to establish status or confirm whatever synonymy is involved. As a whole, the configuration of the surface of Europe and its relation to vast continents on the east and south have been conducive to more legitimate butterfly variation than ever our territories here will be able to show. However, this does not mean that conception of classification terms need to be strained. Should America work out "geographical variation" in the future, it will have several distinct advantages over Europe. I might mention several.

1st. Our systematists have been able to keep up to date by publishing fairly often, but for the most part privately, *synonymical* check lists. (Personally, I would like to see published yearly at Washington, complete check lists of all U. S. insects and in check list style only. The printed matter space would not be so great and new names could be designated as new for the year. Government paper and ink could be used for this purpose as well as for certain other purposes of which I doubt the good.)

2nd. Our authors have, as a rule, described the insects they are naming in a full and accurate manner at the time of the

first proposal of their new names. Rarely do our workers "tell of a summer's trip and in the middle of a paragraph somewhere stick-in a name nov." Most of the editors of our journals paragraph a description, as a whole, separately. The old idea of "hiding out" a name, as if the author was bashful, uncertain or ashamed of it, is as old-fashioned as it is unethical.

3rd. By creating typical paratypes at time of original description and generally depositing these in different entomological centers, much material is available to all students.

4th. Original types are more accessible to American specialists in America than they are to European specialists in Europe. Sometimes it is necessary to have photographs of both upper and under sides of a specimen. Important details of a type cannot be gained by viewing it under glass. Institutions should record all their types by photograph and the negatives of these should be always available.

5th. Will not some Lepidopterist, using preferably the English language, work out the transition forms as listed in Europe? The study of "aberrations" systematically by series of grades will cut down an immense number of names.

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**To all Collectors of New York State Lepidoptera:**

As sub-editor for the Lepidoptera of the New York State List of Insects, now coming off the press, I wish to express my regret that it has not been possible to give credit to collector or determiner for most of the records compiled before 1916. They have been recorded in all cases of any particular interest in our files, but the circumstances of the compilation, which was an alternation of frantic haste and of long delays, made it impossible to transfer them to the finished manuscript. For the same reason the order of species, which in the first draft followed "Dyar's List," is in some confusion, especially in the Noctuidae.

I also regret, though I cannot accept personal blame for them, the errors, and the obscurities in giving credit, resulting from innumerable changes made in the editorial office of the New York State College of Agriculture, which were made without my knowledge in violation of a definite agreement, and which they refused to rectify in proof. I may say that the proof of the "Lepidoptera of New York" had received similar treatment, and that the agreement was made in that connection.

WM. T. M. FORBES.

# The Economic Importance of Paratenodera sinensis (Orthop.: Mantidae).*

By WALTER R. THIEROLF, Glenside, Pennsylvania.

*Paratenodera sinensis,* the praying mantis, a comparatively recent arrival in this country from China, is gaining a rapid foothold in the vicinity of Philadelphia. Some normal spread is being noted annually and some successful efforts have been made to colonize it in new localities. Since no actual study of the economic relationship of this new-comer has been made, would it not be the part of wisdom to call a halt on further distribution until its economic status has been established upon a scientific basis?

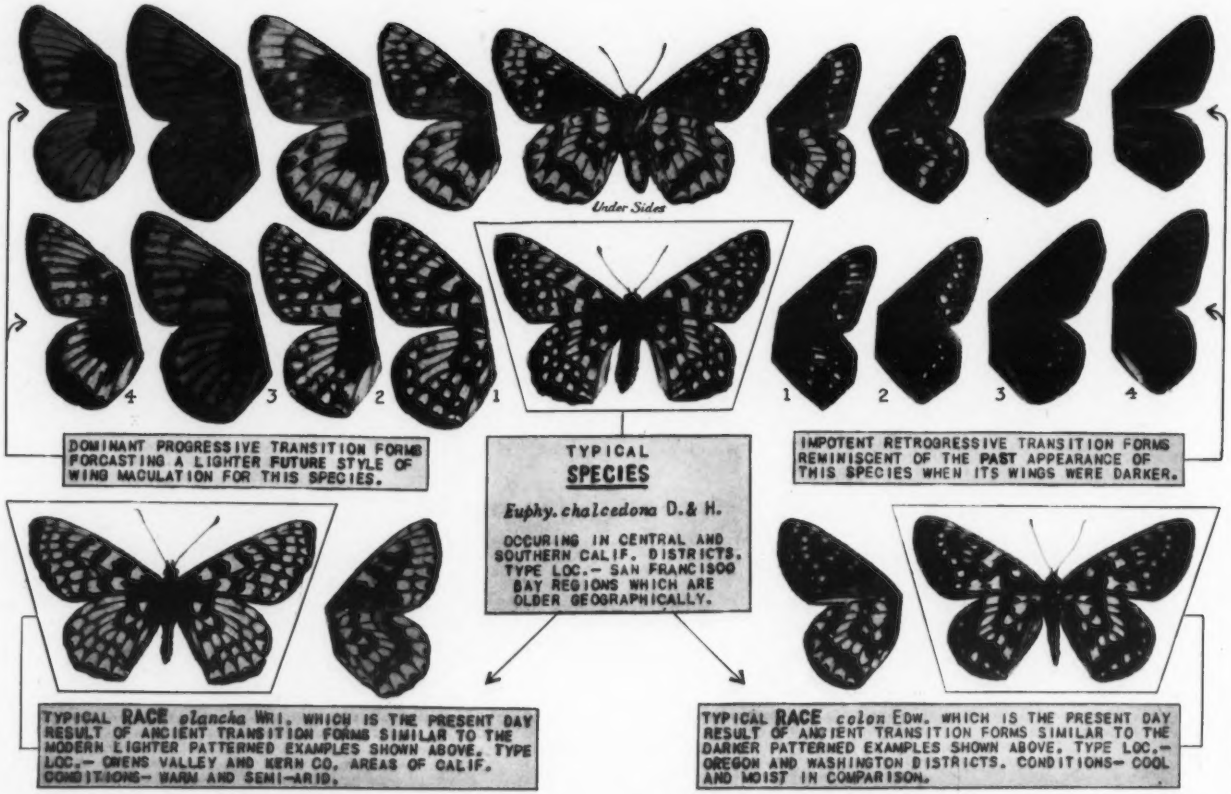
## BENEFICIAL REPUTATION

To this new arrival have been attributed predaceous, carnivorous, even cannibalistic tendencies, and because of these attributes, and possibly because of its religious nomenclature, the praying mantis has been hailed as a welcome combatant against the depredations of the countless hordes of harmful insects. These beneficent qualities have been attributed largely as the result of general observations of its feeding habits without any special effort to determine its relative standing as an economic factor (Rummel 1926).

## THE NEED FOR INVESTIGATION.

While numerous instances have been reported, covering a wide range of insect victims of *Paratenodera sinensis,* most of these observations have been made during its captivity, when abnormal conditions of environment, degree of hunger, and limitation in the choice of food were determining factors in the selection of its food (Didlake 1926). Such observations have also been made with *Stagmomantis carolina,* a closely related species, and while different foods were offered the two

* A thesis submitted to the Department of Zoology, Graduate School, of the University of Pennsylvania, in partial fulfillment of the requirements for the degree of Master of Science, May, 1927.


Under Sides
4
3
2
1
1
2
3
4
DOMINANT PROGRESSIVE TRANSITION FORMS FORCASTING A LIGHTER FUTURE STYLE OF WING MACULATION FOR THIS SPECIES.
TYPICAL SPECIES
Euphy. chalcedona D.& H.
OCCURING IN CENTRAL AND SOUTHERN CALIF. DISTRICTS. TYPE LOC.- SAN FRANCISCO BAY REGIONS WHICH ARE OLDER GEOGRAPHICALLY.
IMPOTENT RETROGRESSIVE TRANSITION FORMS REMINISCENT OF THE PAST APPEARANCE OF THIS SPECIES WHEN ITS WINGS WERE DARKER.
TYPICAL RACE olancha WRI. WHICH IS THE PRESENT DAY RESULT OF ANCIENT TRANSITION FORMS SIMILAR TO THE MODERN LIGHTER PATTERNED EXAMPLES SHOWN ABOVE. TYPE LOC.- OWENS VALLEY AND KERN CO. AREAS OF CALIF. CONDITIONS- WARM AND SEMI-ARID.
TYPICAL RACE colon EDW. WHICH IS THE PRESENT DAY RESULT OF ANCIENT TRANSITION FORMS SIMILAR TO THE DARKER PATTERNED EXAMPLES SHOWN ABOVE. TYPE LOC.- OREGON AND WASHINGTON DISTRICTS. CONDITIONS- COOL AND MOIST IN COMPARISON.

species, a striking similarity has been noted in the insect food actually accepted by them (Rau and Rau 1913).

This brief study, which is an effort to record, from field observations of feeding habits and from laboratory analyses of stomach contents, the insects preyed upon under normal unconfined conditions, does not presume by any means to determine definitely this economic status. Before the life of any species is jeopardized by placing it upon the scale of economic benefit or harm it should be granted the justice of an intensive and extensive investigation. This report is presented, therefore, as an effort to stimulate such further study before even seriously considering the suggestion that *Paratenodera sinensis* may be a lion in a sheep's clothing. And if the results which are herein recorded appear to cast a shadow of economic suspicion upon the praying subject, it would seem that justice should be tempered with mercy by sounding a plea for extended economic sentence until some of the points in question shall have been further elucidated.

## Incubation and Distribution of Specimens for Observation.

During the winter and early spring of 1926 about fifty egg cases of *Paratenodera sinensis* were gathered from open fields and hedges in the vicinity of Glenside, Pennsylvania. These cases were placed about the shrubbery of my home and neighboring lawns. Some cases were kept in the house at normal living room temperature (70 degrees) for early hatching. On May 15, the first indoor specimens were hatched. The earliest outdoor hatchings began June 1, and continued until early in July.

During this period, approximately 10,000 specimens were distributed over lawns, shrubbery, flowers and trees of the neighborhood. By far the largest part of this number disappeared, either having died or gone to the open fields not far away. Wandering specimens were brought back during the

whole summer season, and at no time from early July to October frosts were specimens for observation unavailable. A number of individuals were released on a farm near Doylestown, about twenty miles from Glenside, and some of the observations of the accompanying tabulations were made from these specimens. All records apply to adults with the exception of a few specimens which were in the later stages of metamorphosis.

METHODS OF OBSERVATION.

Records of feeding habits are listed under the following heads: (1) Confined and artificially fed. (2) Unconfined and insect baited. (3) Unrestricted freedom. (4) Microscopic analysis of contents of alimentary tracts.

The first method, where specimens were placed in jars and boxes and supplied with various forms of insects, was not performed with a view to weighing economic worth by stimulating appetite and then offering victims which might not have been touched during freedom, but rather for the purpose of discovering existent possibilities of food taken during freedom.

In the second type of observations, individuals were given their freedom, and conditions were so arranged that while certain insects were placed within reach, their hunger was not controlled, and acceptance or rejection of the food was left optional.

The third method was the observation of groups in their own actual choice of environment and their own selection of food. This constituted the only truly scientific method of obtaining economic facts from the living specimen.

The fourth process, that of analysis of the contents of the alimentary tract, was an effort to identify parts of insects eaten. This was successful only to a limited degree because much of the food material was broken and digested to a stage beyond possibility of identification.

Following are the tabulations of the results obtained:

CONFINED AND ARTIFICIALLY FED.

Table 1.

| Date | Mantids Observed | Mantids Which Ate | Insects Offered | Insects Eaten: Harmful | Beneficial | Neutral |
|---|---|---|---|---|---|---|
| July 29-30 | 1 | 1 | 1 horse fly | 1 | | |
| | | | 1 bumblebee | | | |
| " 29-30 | 1 | 1 | 1 horse fly | 1 | | |
| | | | 1 grasshopper | 1 | | |
| " 29-30 | 1 | 1 | 1 garden spider | | | |
| | | | 1 daddy long legs | | | |
| | | | 1 Jap. beetles | | | |
| | | | 1 house fly | 1 | | |
| " 29-30 | 1 | 0 | 1 house fly | | | |
| | | | 1 grasshopper | | | |
| Aug. 14-16 | 1 | 1 | 3 blister btls. | 2 | | |
| | | | 3 house flies | 3 | | |
| " 16 | 1 | 1 | 1 Jap. beetle | 1 | | |
| " 19-21 | 1 | 1 | 15 house flies | 9 | | |
| | | | 1 garden spider | | | |
| | | | 1 caterpillar | | | |
| | | | 8 house flies | 3 | | |
| | | | 1 katydid | | | 1 |
| | | | 2 garden spiders | | | |
| | | | 1 wasp | | | |
| Aug. 24 to Sept. 4 | 1 | 0 | 2 katydids | | | |
| | | | 2 grasshoppers | | | |
| | | | 1 caterpillar | | | |
| | | | 3 crickets | | | |
| | | | 1 blister beetle | | | |
| Aug. 6-7 | 1 | 1 | 1 cricket | | | |
| Aug. 8 | 1 | 0 | 2 Jap. beetles | | | |
| | | | 1 firefly | | | |
| Sept. 10 | | | | | | |
| " 11 | 10 | 1 | 2 Jap. beetles | | | |
| | | | 1 cricket | | | 1 |
| | | | 1 firefly | | | |
| | | | 1 lady beetle larva | | | |
| | | | 1 aphis covered leaf | | | |
| | | | 4 wasps | | | |
| | | | 1 honey bee | | | |
| | | | 3 blister beetles | | | |
| | | | 1 grasshopper | 1 | | |
| Sept. 10 | | | | | | |
| " 13 | 17 | 1 | 1 Jap. beetle | | | |
| | | | 50 blister beetles | | | |
| | | | 1 hornet | | | |
| | | | 6 wasps | | | |
| | | | 1 honey bee | | 1 | |
| Oct. 10 | 1 | 1 | 1 moth c'rplar | 1 | | |
| Totals | 38 | 10 | 134 | 24 | 1 | 2 |

In table 1 are listed the results of a series of observations covering the period from July 29 to October 10. The period of confinement for individual groups ranged from one to four days. Considering each day a mantid was observed as a mantid day there were one hundred eighteen mantid days. The fact that thirty-eight specimens during this time consumed only twenty-seven insects from a possible one hundred thirty-four offered (considering the aphis covered leaf as one specimen) reduces the reputed voracity of *Paratenodera sinensis* to the surprisingly low average of a very small fractional part of an insect per day for each specimen. Twenty-four of the insects eaten were harmful forms, one was beneficial and the remaining two were neutral.

In the boxes where larger numbers were confined the amount of food eaten was unaccountably small. At least one individual during this time was in the pre-molting condition, its cast exuvia being found in the box on the last day of confinement. Also the specimen under observation from August 24th to September 4th cast its exuvia on the last date.

(To be Continued)

## The Tentamen versus the Tentamen Names.

By Wm. T. M. Forbes, Cornell University, Ithaca, New York.

In the February number of the Entomological News, Dr. Holland discusses my attitude toward Hübner's names proposed for Lepidoptera as expressed recently in *Science*. Perhaps a preliminary remark may clear some of the issues.

The question seems largely to be as to what is a scientific name, and how much may or must we extend our definition in applying it to early workers whose ideas on the matter were less well formulated than our own. As I see it, a scientific name of an animal has two essential parts: *first*, a name-word applying to a group of animals with some common characters, and not duplicated in the animal kingdom; *second*, a word for each species of this group, which shall not be duplicated within the group. It is also, I think, generally agreed that additional words may be added between these two, to indicate

subordinate groups within the major group (subgenera within the genus), and others for the subdivision of the species (subspecies, variety, etc.). It is now customary to set off these subordinate parts of the name in some way, but many ancients whose names are universally accepted did not do so. For instance Linnaeus himself frequently abbreviated the subgenus name in exactly the same way as the genus, and no one ever thought he thereby invalidated his genus names, no matter how they may have viewed his subgenera.

The basis of my contention then, is that when Hübner in the period 1806-1816 issued a plate labelled *Limnas ferruginea Chrysippus* he established a perfectly valid scientific name, composed of genus (*Limnas*) and species (*Chrysippus*), with an intermediate adjective between, much as was done by Linnaeus himself (*Sphinx Adscita Phegea*) but further subordinating the second word by engraving it in smaller characters and without a capital.

Now as to Dr. Holland's particular points. The *Tentamen* to be sure speaks of *Stirpes,* a rather noncommittal word meaning in English "stocks" or "groups." He used many words in an unusual way: *Gattung* or "Genus" for *species, Schwingen* and *Senken* for fore and hind wings; but if we look at his *names,* we find he is making perfectly regular binomials, *Limnas Chrysippus* and a hundred others, so he uses a stirps *name* as a genus *name* is used today. Now that the Committee have ruled the *Tentamen* unpublished I suppose we fall back on the next oldest use (date uncertain, 1806-1814) and there we find *Limnas ferruginea Chrysippus*—the very same name attached to a perfectly good picture. I can now say, moreover, that in the index to his *Sammlung Europäische Schmetterlinge,* published in 1822, which gives the latest picture of his ideas, he is doing just the same.[1]

Besides Forbes, Scudder, etc., Ochsenheimer (1816) and Harris (1841), with others between, also "jumped" to the conclusion that Hübner's *stirps* names were *genera.* I seem to be in good company at least.

[1] This index is now in our Cornell library. The alphabetic entry is "Chrystppus" [sic] L. 678. 679. Limnas ferruginea.

The *Anzeiger* of the *Verzeichniss,* as well as the *Verzeichniss* itself, uses a different system, which he adopted in 1816 and continued to use in the two works he started at that time. Evidently he viewed consistency in a single book more important than consistency in time! This second system is, as Dr. Holland says, binomial even in the strictest modern sense. As I see it there are two possible ways to reconcile them. One [2] is the obvious way by which we now clear all points of nomenclature when we can, namely by taking whichever name first gets valid publication. If we count out the *Tentamen* this will *in general* be the first volume of the *Sammlung Exotische Schmetterlinge* for the butterflies, the *Verzeichniss* for the moths, but there are many uncertainties of date, and a few embarrassing certainties. Thus the first *Diphthera* published was *hieroglyphica* (a South American Erebid of the genus *Noropsis*), which I think no one would like to accept. There was no other *Diphthera* published before 1816 when Ochsenheimer used it expressly on the basis of the *Tentamen.* There is no use in further analysis of the butterflies; two are preoccupied, as Holland and I have already said (and many others). The rest are just as obvious as Linnaeus's own butterfly names.

Perhaps I should say in parenthesis that the puzzle about *Apatela* (originally *Apatele*) as used by Harris, was merely where he got it. He uses it as a well known name, typically represented by *aceris.* If he did not get it from a Hübner *Strips* name, where on earth did he get it? Ochsenheimer had come in contact with the *Tentamen* too late to use it as he did *Diphthera* and several others.

As to Limnas, it should be noted that sometime after 1814,

[2] The other way would be to make a hypothetical combination of his two systems, thus:

| | | | | |
|---|---|---|---|---|
| Now..... | Genus | (adjective) | Subgenus | Species |
| Hübner..... | Stirps | familia | Coitus | Genus |
| Name..... | Limnas | ferruginea | Euploea | Chrysippus |

using the names cited in the singular in the *Anzeiger* to the *Verzeichniss.* Linnaeus's scheme then makes a substantial parallel:

| Genus | Subgenus | (adjective) | Species |
|---|---|---|---|
| Papilio | Danaus | festivus | Chrysippus |

The result in nomenclature is as before.

the date of our prospectus, Hübner recognized his "Limnas" was heterogeneous, and published one Erycinid under the name "Napaea." In the Verzeichniss, as already said, the stirps names are supergeneric, but we can extract from it what Hübner had in mind—we find all of his *Erycinids* formerly in Limnas are now Napaeae. Finally in 1822, chrysippus, the original Tentamen species, is again in Limnas, while lucina, the only European Erycinid, is properly enough in Napaea. Also Boisduval does not *designate* pixe as type of Limnas; as I have already stated in *Science,* he merely *figures* it as an example. The corresponding text was never published, but I think we can be sure from Boisduval's custom that we would have there found Limnas credited to Hübner, and a species known to Hübner listed as type.

Mr. Benjamin has called my attention to the fact that Dryas, Najas, Hamadryas and Oreas (as subgenera) go even back of the Tentamen to the introduction to Borkhausen.

Finally, as to changes of name, such as Hübner's translations of the Latin names of the "Tentamen" into the Greek of the "Syst. Alph. Verz." I had supposed it was generally agreed: 1, that until the middle of the last century it was considered allowable for the author, and even for others, to change an unsuitable name, as we still have some right to do in morphology; and 2, that in our *present* codes such changes have been rejected, and we use the original names proposed.

## The Entomology in the Bestiary of Philippe de Thaun.

By HARRY B. WEISS, New Brunswick, New Jersey.

Regardless of the origin of the Physiologus stories, which circulated during the Middle Ages under the name Bestiaries, and for which various theories have been advanced, it is of interest to know just what kind of popular entomology flourished during the eleventh, twelfth and thirteenth centuries. Reference has been made[1] to the spiritual application of the peculiarities of the animals utilized in the stories, and it is

[1]Journ. N. Y. Ent. Soc. Dec. 1925, Vol. XXXIII, pp. 238-242.

usually assumed that theology controlled all thought during the Middle Ages and that natural science was used only as a carrier of religious doctrine. However, according to Thorndike[2] the people at that time studied nature out of curiosity and not in search of religious parallelization, and by the thirteenth century the scientific writers, when they utilized the Physiologus at all, discarded its religious content. Thorndike questions whether the characteristic elements of the Physiologus were ever religious and asks if they were not always scientific. According to Ahrens,[3] the title originated with Aristøtle and the contents for the most part with Pliny, and the allegories do not appear in certain early texts. Thorndike calls attention to the fact that the allegories cannot do without the facts, or what passed for facts, about the animals while the pseudo-scientific facts do not need the allegories and often dispense with them.

Thomas Wright, in his "Popular Treatises on Science written during the Middle Ages in Anglo-Saxon, Anglo-Norman, and English" (London 1841), reproduces among other things the Bestiary of Philippe de Thaun, in Anglo-Norman, with a translation into English. Little is known about Philippe de Thaun, except that he was a poet, and according to his "Livre des Créatures," had an uncle, Humfrey de Thaun, "who was chaplain to Yhun and seneschal to the king." Wright states that Philippe was patronized by Adelaide of Louvaine, queen of Henry I, to whom his Bestiary, written within a few years after her marriage in 1121, was dedicated. Philippe's Bestiary was based on the Latin Bestiaria which were common in the manuscripts of the period. Various animals, mythological and otherwise, are mentioned in the poem, but only that portion of Wright's translation relating to insects is quoted below. It will be noted that Philippe, in his account, mentions only the ant and the ant-lion.

"Philippe de Thaun into the French language—has translated the Bestiary, a book of science,—for the honour of a jewel,

[2]A History of magic and experimental science. Vol. I. (New York, 1923).

[3]Zur Geschichte des sogenannten Physiologus, 1885.

who is a very handsome woman,—Aliz is she named, a queen she is crowned,—queen she is of England, may her soul never have trouble!—In Hebrew, in truth, Aliz means praise of God.—I will compose a book, may God be with its commencement."

"This saith Solomon of the ant rightly,—and of the idle man who waits for the fine weather;—be not slothful, look at the ant,—it carries much corn to its hole in summer,—in winter it sustains itself by the work it has performed.

"This say writings, that the ant has three natures;—it has such a nature, when it issues from its hole,—orderly in the morning right on its way,—and when it has found grain of all sorts of corn,—it knows well which is wheat, by the smell alone;—it does not care for grain of barley, such is its nature;—but if it is grain of wheat, it takes it with its mouth,—carries it to its nest, is supported with it in winter.

"And when it meets an ant, it does him no disgrace or shame,—nor takes from him his property, nor asks nor gives; the ant, which is cunning, puts itself in the track—from which the ant turned who brought the grain;—who brings the wheat, take of its experience.—Since this little beast shows us the good condition,—man in the same manner ought to take of its experience.

"And hear without doubt another similitude of it;—for Scripture says, by figure, five virgins,—and five lamps full of oil and light,—went to a wedding, they carried them burning;—there were five foolish, their lamps were empty;—those entered who carried them full,—the bridegroom knew them, and received them joyfully;—the foolish ones entered not, who brought nothing there.—This is a great signification, have it in remembrance.

"By the five virgins are understood truly the five senses,—seeing, hearing, talking, touching and smelling—and virginity represents chastity,—and who has that, shall be welcome to the wedding,—that is, he shall come safely to the Judgment,—where will be the bridegroom who shall give the great gifts,—that is the Lord God, who will be in majesty.

"And the lamp signifies the soul in this life; the oil, Christianity; the fire, the Spirit of God.—We have this meaning by the ant;—hear the other nature, according to Holy Scripture;—the grain which it has it separates in two parts,—thus it does cunningly, that in winter it may take of it for support.

"Hear thou, man of God, this is authority,—as much seed as is written, as Isidore saith,—thou shouldest part it in two for support in winter,—that is, spiritually, and historically,—

that thou come safely at the Day of Judgment;—and therefore St. Paul says for truth in his writing.—'the law is spiritual, and not corporeal; the letter kills,' as he says, 'and the spirit lives.'—This is said for example, that you may have remembrance of it.—The traitrous Jew understands so much of Scripture,—not in allegory; he knows not what it signifies.

"But hear, thou man of God, understand authority,—and hear Scripture, and the third nature—of the ant, that it understands by its smell—which is grain of wheat, and similarly, which is of barley;—when it has found a grain of barley, and has smelt it,—then it stoops and goes to seek the wheat;—when it has found an ear, it mounts wisely upon it,—takes the flour of the grain, and puts it in its hole;—it collects rather the flower than the straw.

"O man of holy lfe, hear what it signifies;—by the letter, understand thou the straw of the wheat; know that the flower of it signifies the allegory;—and since the nature of this little animal show us—that what it does leads to all good,—man in the same manner ought to take experience.

'And what the writing says, that the ant does not care for barley,—has a great signification; listen to the allegory;—barley is food to a small creature;—by barley, we understand the doctrine of heretics.

"And Solomon says for truth in his discourse,—'For wheat they gave me barley, who hated me;'—otherwise do the triflers, may God give them trouble!—for barley, he takes wheat from his next kinsman,—whom he takes by surprise, he soon reduces him to seek his bread,—he was not his friend, since he has impoverished him,—then he conceives hatred for him, and looks upon him as a thing that is vile.

"Know that, by Solomon, we understand wise people,—and by the triflers, are understood covetous and bad people,—and by barley, vain-glory, sin, and heresy;—he who will please God, must desert the deceiver.—Photius, Sabellicus, Donatus, Arius,—these were heretics, and merited ill,—let us not believe in their folly, let us leave their heresy.

"Also Isidore speaks of the ant in his writing,—and shows the reason well why it is named *formica*;—It is *fortis* (strong), and carries *mica* (a particle), that is the meaning of the name; there is no creature of so small a shape,—which carries by its own force so great a burden;—it carries a burden of heavy lead of its own size,—this, a horse or a dromedary connot do.—Also, this beast is of so cunning a nature,—if it rain on its wheat, it throws it out to the wind,—and if it be sound

within, then it saves it to the time,—which will come in winter, when it will eat it.

"Also Isidore speaks further of another ant:—In Ethiopia there are some who make a mystery of the grain;—there is a river there, the grain of gold is produced in it,—which they collect with their feet, and defend it from people,—people dare not approach there, to take or touch it;—whom these ants bite, they die immediately;—no one dares approach there, the ants are so fierce.—If any one will have some of that gold to make his treasure of,—by a stratagem they contrive they have great plenty of gold.—They keep without food mares which have newly colted,—then on the third day, as you will find, a little basket—on the backs of the mares they bind firmly,—they make them pass the river to bring the gold,—and draw them to a meadow which has great plenty of grass,—the ants are there where the mares go,—they make their cells in the basket and load the mares,—when they are satisfied, charged, and filled, they repair back behind them,—they run to the colts where they are neighing,—which the men have bound and attached by the river; thus truly that people get the gold.

"There is also a beast which is master of the ant,—it is the formicaleon, that is its name;—it is the lion of ants, whence it is thus named;—it is a very little beast, puts itself in the dust,—where the ant goes, and does it great outrage;—but of this matter I will make no more discourse,—because I will now begin to treat of another."

## Parasites of Some Anthidiine Bees (Hym.: Megachilidae, Chrysididae; Dipt.: Bombyliidae).

By CLARENCE P. CUSTER, University of Colorado, Boulder, Colorado.

Various insects are parasitic on bees of the genera *Anthidium* and *Dianthidium*. In 1923 H. Friese reported that certain bees of the genus *Stelis*, two wasps, *Chrysis refulgens* and *Holopygia fervida*, and two beetles, *Zonitis mutica* and *Sitaris muralis* were parasitic on the European *Anthidia*. In 1926, C. H. Hicks reported a fly, which Mr. Green later determined as *Spogostylum daphne*, parasitic on *Dianthidium sayi*. In 1927 he showed that *Eusapyga proxima* Cresson was parasitic on *Dianthidium pudicum*. The same year I found a wasp, *Chrysis* (*Tetrachrysis*) *lauta* Cresson[1] to be parasitic on

[1]Determined by Miss Grace Sandhouse.

*Anthidium porterae*. I have found reference to no other American parasite of this genus.

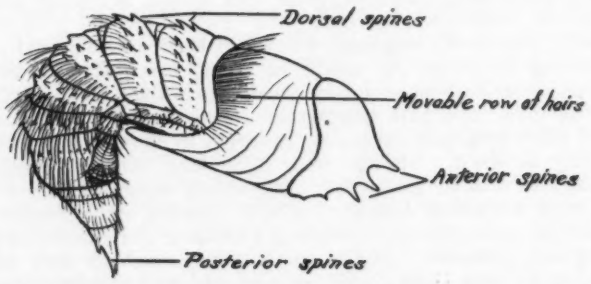
Ordinarily about three months in an incubator at 27° C. are sufficient for the maturation of an insect which would require nine months in the out-of-doors. It is interesting to note that *Chrysis lauta* required over ten months of incubation. This may have been due to one of two factors: Either the larva was waiting over a season before maturing or it had been injured by being kept at 37° C. for the first week of its incubation. At any rate it postponed the eating of the host until the latter had consumed the pollen and spun a cocoon. After this it constructed its own cocoon inside that of the bee. The wall of the wasp's cocoon consisted of a hyaline membrane on which, towards the mammillary end of the bee's cocoon, there was a cream-colored, shield-shaped area which was more fibrous than the rest.

The larva remained without further development from September 26 to July 22 at which time the dark eyes were visible. Eight days later it had fully developed and on August 1 this bright green wasp emerged by slitting the wall along one side with its mandibles. Miss Sandhouse informs me that the male of this species is unknown.

There is some evidence that certain mutillid wasps are parasitic on bees of the genus *Anthidium*. Thus I have observed such a wasp near the nest of an *Anthidium* that was filling in the tunnel with pebbles. The bee was securing these from a distance of a meter or so away, and the wasp, which is wingless in the female sex, was between her and the nest. Every time the bee flew overhead the wasp followed until it found the nest. Then it entered by digging down through the pebbles. Approximately a minute was spent underneath, apparently while it was laying its egg in the host's cell. Neither host nor parasite could be reared from this cell and so the matter will bear further investigation.

During the winter of 1926, C. H. Hicks reared the parasitic fly, *Spogostylum daphne*, from the cell of the bee *Dianthidium sayi*. In 1927 we secured over a dozen such parasites from the resin cells of this bee. This fly is specially adapted to

gain exit from the tough cocoon and hard, resin walled cell,—for it must emerge from this before shedding its pupal covering. From the anterior end, which is covered by smooth chitinous armor, eight spines project. It sways back and forth and thus batters its way, with the help of these spines, through the wall of the cell. The row of hairs, which arises from the junction of thorax and abdomen, as well as the dorsal spines catch on the edge of the opening and thus prevent a




**The armor-plate of the pupa of *Spogostylum daphne* which enables it to gain exit from the bee's cocoon and resin cell. (× 7.5 diameters.)**

slipping back into the cocoon. When the parasite is almost completely outside the latter, the cephalic armor-plate bursts and the adult is given its full freedom. The larva is undoubtedly carnivorous for in some cases I have opened parasitized cells and seen the parasite, hardly larger than the egg from which it had hatched, firmly attached to the back of the host which was almost full-grown. In such instances, as though irritated by the light, the anterior end of the parasite would lash rapidly back and forth, showing that it was alive.

## Literature Cited

Custer, C. P. and Hicks, C. H. 1927 Nesting habits of some Anthidiine bees. Biol. Bull., 52: 258-277.

Friese, H. 1923 Die europäischen Bienen (Apidae). 3 und 4 Lieferung: 297-307. Berlin and Leipzig.

Hicks, C. H. 1926 Nesting habits and parasites of certain bees of Boulder County, Colorado. Univ. of Colo. Studies, 15: 217-252.

Id. 1927 Nesting habits and parasites of *Dianthidium pudicum* Cresson. Psyche.

## A New Species of Batyle (Coleop.: Cerambycidae).

By J. N. KNULL, Pennsylvania Bureau of Plant Industry.

The following *Batyle* differs so widely from *Batyle ignicollis* Say in color and sculpture of thorax that the writer believes it worthy of a name.

**Batyle rufiventris** n. sp.

Resembling a large specimen of *ignicollis* in shape; head, thorax, entire ventral surface, legs with the exception of the tibiae and tarsae, scutellum, small area around scutellum and humerus rubescent, antennae and elytra piceous. Head densely punctured, antennae, when laid back over the elytra, extending to about the middle of same, first joint clavate, second about as long as broad, third longer than first, fourth shorter than third, fifth longer than fourth, sixth shorter than fifth, joints gradually decreasing in length to eleventh, eleventh as long as tenth. Thorax wider than long, widest basally, dorsal area opaque, punctures small, widely separated, becoming more numerous laterally, entirely wanting on a median dorsal line, each puncture containing a bristling hair. Scutellum triangular, glabrous. Elytra nearly three times as long as wide, wider than thorax, sides parallel, obtusely rounded posteriorly to rounded apices, densely punctured, punctures becoming larger and less numerous anteriorly, each puncture containing a bristling hair. Ventral surface shining, abdomen with minute sparsely placed punctures, each puncture containing a long fine hair. Length 14 mm., width 3.5 mm.

*Type* a female labeled Sierra Ancha Mountains, Gila Co., Arizona, August, D. K. Duncan collector.

The writer is indebted to Mr. Duncan for the specimen and also to Mr. W. S. Fisher, who compared the insect with the material in the National Museum.

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### The First Insect Described from North America:

In the days of Queen Elizabeth, as stated in the letter of dedication, Thomas Moufetius (or Mouffet) wrote a book on insects, which he intended to dedicate to the Queen. He died unexpectedly and the book was not published till 1634, when it appeared in Latin, as "Insectorum sive Minorum Animalium Theatrum." On page 98 of that edition is figured the large southern form of the Tiger Swallowtail, *Papilio glaucus australis*. The figure has some fantastic details, but is un-

mistakable, and is credited to *P. glaucus* in Rothschild and Jordan's revision of Papilio. Unless some still unknown record is found from the Spanish explorations, I suspect that this will prove to be the first described North American insect, and at the same time the first insect collected in North America, as the original was no doubt taken in the sixteenth century exploration of Virginia.

In any case it is earlier than any of the species mentioned *as strictly North American*, in Rohwer's article in the December number of the *News*. WM. T. M. FORBES.

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**A Note on Tenodera sinensis Sauss. (Orthop.: Mantidae).**

The Chinese mantis, *Tenodora sinensis* Sauss, was introduced into the United States about three decades ago. It was brought overseas on nursery stock to Mt. Airy, Pennsylvania, near Philadelphia, where it became acclimated and has now spread northward to New York and has been introduced into Connecticut and Massachusetts ([1] & [2]), but has not been reported as having established itself permanently that far north; southward it has now been found to occur in nature as far as northern Virginia. Its unusually large size and interesting appearance make it an object of general curiosity and specimens are often sent in for determination.

An apparently unrecorded variation in the biology of this large mantid is that the females, at least in captivity, sometimes produce egg-masses entirely unlike the sub-spherical and fluffy ones typical of this species; they are elongate and with little, or scarcely any, of the fluffy papery outer covering, in extreme cases resembling very much those of the Carolina Mantis, *Stagmomantis carolina* John. That such oothecae are produced by the females of *Tenodera* is certain, as they have been formed by caged specimens in some observed instances, one in Kent County, Maryland, and one in New Jersey. These elongate and more or less smooth oothecae are due perhaps to their producers being confined during oviposition, the oothecae produced being thereby rendered abnormal in structure and form. Miss Hart, of the Bureau of Entomology, reports, however, that she has found such oothecae formed by this species outdoors in Washington, D. C.

A. N. CAUDELL, Bureau of Entomology, U. S. Department of Agriculture

[1]Britton, W. E., Bull. Div. Ent. U. S. Dept. Agric., No. 46, p. 107 (1904). Id., Guide Ins. Conn., Part II, p. 60, pl. vi, fig. 1, 2 (1911).

[2]Morse, A. P., Psyche, vol. xxvi, p. 25 (1919). Id., Man. N. Engl. Orth., p. 329, fig. 44 (1920).

## Amendments to the International Rules of Zoological Nomenclature

Upon unanimous recommendation by the International Commission on Zoological Nomenclature, the International Zoological Congress, which met at Budapest, Hungary, September 4-9, 1927, adopted a very important amendment to Article 25 (Law of Priority) which makes this Article, as amended, read as follows (*italicized type represents the amendment;* Roman type represents the old wording):

Article 25.—The valid name of a genus or species can be only that name under which it was first designated on the condition:

(a) That (*prior to January 1, 1931*) this name was published and accompanied by an indication, or a definition, or a description; and

(b) That the author has applied the principles of binary nomenclature.

(c) *But no generic name nor specific name, published after December 31, 1930, shall have any status of availability (hence also of validity) under the Rules, unless and until it is published either*

(1) *with a summary of characters (seu diagnosis; seu definition; seu condensed description) which differentiate or distinguish the genus or the species from other genera or species;*

(2) *or with a definite bibliographic reference to such summary of characters (seu diagnosis; seu definition; seu condensed description). And further*

(3) *in the case of a generic name, with the definite unambiguous designation of the type species (seu genotype; seu autogenotype; seu orthotype).*

The purpose of this amendment is to inhibit two of the most important factors which heretofore have produced confusion in scientific names. The date, January 1, 1931, was selected (instead of making the amendment immediately effective) in order to give authors ample opportunity to accommodate themselves to the new rule.

The commission unanimously adopted the following resolution:

(a) It is requested that an author who publishes a name as new shall definitely state that it is new, that this be stated in only one (*i.e.*, in the first) publication, and that the date of publication be not added to the name in its first publication.

(b) It is requested that an author who *quotes* a generic name, or a specific name, or a subspecific name, shall add at least once the author and year of publication of the quoted name or a full bibliographic reference.

The foregoing resolution was adopted in order to inhibit the confusion which has frequently resulted from the fact that authors have occasionally published a given name as "new" in two to five or more different articles of different dates—up to five years in exceptional cases.

The three propositions submitted by Dr. Franz Poche, of Vienna, failed to receive the necessary number of votes in commission to permit of their being recommended to the Congress. Out of a possible 18 votes for each proposition, Poche's proposition I received 9 votes, II received 6 votes, and III received 7 votes.

Zoological, medical and veterinary journals throughout the world are requested to give to the foregoing the widest possible publicity in order to avoid confusion and misunderstanding.

C. W. STILES, *Secretary to Commission*

(Reprinted from *Science* for Jan. 6, 1928, pp. 17-18.)

## Personals.

Mr. A. B. Gahan, of Bureau of Entomology, is in Europe studying the types of parasitic Hymenoptera.

According to the Journal of Economic Entomology for December, 1927, Mr. R. A. Cushman, United States National Museum, has been appointed Honorary Assistant Custodian of Hymenoptera and has been given charge of packing and shipping to the Museum, the 1450 or more Schmitt boxes containing the collection of the late C. F. Baker.

Professor R. A. Cooley, professor of Zoology at Montana Agricultural College, will leave on April 1 for a year's leave of absence. He will spend part of the time in the interior of Africa with the Chicago Zoological expedition and will study tick parasites. (*Science,* March 9, 1928). Professor Cooley has worked on the Rocky Mountain Spotted Fever Tick and its relation to human diseases for many years.

Dr. George N. Wolcott, formerly entomologist at the Insular Experiment Station, Porto Rico, and more recently with Service Technique, Haiti, has accepted a position with the sugar-cane and cotton experiment station in Peru. He is sailing from New York on April 12. (*Science,* March 9, 1928). Readers of the NEWS will recall Dr. Wolcott's article on the pierid butterfly *Kricogonia castalia,* in our issue for April, 1927.

# Entomological Literature

COMPILED, WITH THE ASSISTANCE OF "BIOLOGICAL ABSTRACTS," UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual **volume**, and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as explained above.*

**Papers published in the Entomological News are not listed.**

**GENERAL.—Ball, E. D.**—Symposium: needed lines of investigation in American Entomology. (Introduction by E. D. Ball. Taxonomy by S. A. Rohwer. Insect physiology by P. S. Welch. Insect bionomics by R. W. Doane. Insect ecology by A. C. Allee. Needs in the study of beneficial insects by L. O. Howard. Economic entomology by E. O. Essig and W. P. Flint. Summary by E. F. Phillips.) [7] 20: 419-422. **Brown, F. W.**—Odors and insects. [40] No. 299: 1-9 pp. **Engelhardt, G. P.**—Collecting at Mobile, Alabama. [19] 22: 251-253. **Holland, W. J.**—"Exit the Tentamen, but ...." What? [68] 67: 161-162. **Kitt, M.**—Typen, Cotypen und Anderes. [64] 12:89-92, cont. **McColloch & Hayes & Bryson.**—Hibernation of certain scarabaeids and their Tiphia parasites. [84] 9: 34-42.

**ANATOMY, PHYSIOLOGY, ETC.—Abbott, C. E.**—Further observations on the olfactory powers of the Necrophori. [7] 20: 550-553, ill. **Beal, J. A.**—The development of the proventriculus of Pityogenes hopkinsi Swaine. [7] 20: 522-539, ill. **Bergner, A. D.**—The effect of prolongation of each stage of the life-cycle on crossing over in the second and third chromosomes of D. melanogaster. [42] 50: 107-161. **Bleich, O. E.**—Thanatose und hypnose bei coleopteren. [46] 10: 1-61, ill. **Boldyrev, B. T.**—Copulation and spermatophores of Gryllomorpha dalmatina

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The long-expected LIST OF THE INSECTS OF NEW YORK, WITH A LIST OF THE SPIDERS AND CERTAIN OTHER ALLIED GROUPS [Opiliones, Eriophyidae, Diplopoda, Chilopoda and Protura] has appeared as Memoir 101, Cornell University Agricultural Experiment Station. Ithaca, New York, Date of publication, Jan., 1928. 1121 pp., a folding map in the back cover.—The history of this List is given by the editor, Mortimer Demarest Leonard, in the Introduction. The List was "initiated about twelve years ago by a committee of a number of the leading entomological specialists. . . . Dr. J. Chester Bradley, of Cornell University, was appointed Editor-in-Chief . . . . and a group of subeditors was selected. . . . . Pressure of other work prevented Dr. Bradley from continuing in charge, and the present editor was appointed in the spring of 1923, while he was Acting State Entomologist at Albany, New York. The Board of Editors was somewhat modified for various reasons, and in the fall of 1924, the work was transferred to Cornell University, where it was completed under special appropriation by the New York State College of Agriculture and the Heckscher Research Fund. To these funds the New York Academy of Science added $150 and the New York Entomological Society a like amount." Dr. W. T. M. Forbes gives a brief account of the Faunal Districts of the State (pp. 7-11) accompanied by an outline map in the text. The list of 31 orders, 430 families, 4,797 genera and

16,124 species follows to p. 1083. 15,449 of the species are insects. The different sections of the work were farmed out to more than 150 specialists and collectors, who have brought the data together. Under each species the known localities and dates of appearance are given. The character of the list is thus similar to that of Smith's *Insects of New Jersey,* the 1910 edition of which embraced 331 families, 3,486 genera and 10,385 species. At the end of the volume are alphabetical lists of the more important collecting stations not in the U. S. Official Postal Guide, of the cooperators and authorities and an index down to genera inclusive, which alone occupies 28½ pages in fine type. The University, the Editors, their assistants and collaborators have placed all naturalists under a great debt by this publication.—P. P. C.

## OBITUARY.

Announcement has just come of the death, in Paris, on January 28, 1928, of FÉLIX HENNEGUY. This news is received with very deep regret, although it was not entirely unexpected. The writer saw Henneguy last July at the meeting of the Academy of Agriculture in Paris, and was much disturbed by his appearance. He looked like a man who had not long to live. He was operated upon for stone in the bladder last October, and never recovered. Henneguy was born in Paris, March 18, 1850, and was destined to a medical career. He was an assistant in physiology at Montpellier from 1871 to 1875, and took his doctorate in medicine there. He came to Paris in 1881 and was preparator in comparative embryology at the College of France. He studied under Balbiani and was given a doctorate in science in 1888. He became Professor of Comparative Embryology in 1900. He was made a member of the Academy of Medicine in 1907, and of the Academy of Sciences in 1908, succeeding Alfred Giard. Although his work covered a large field, he had an especial interest in entomology, and his great work, *Les Insectes,* a large, well illustrated volume of eight hundred pages, is well known and is often consulted all over the world. It was published in 1904. It is especially strong in questions of morphology and embryology, and is one of the great books. He also published some shorter entomological papers. A brief review of his life and work was given by the President of the Academy of Agriculture of France at the meeting of February 1st.

L. O. HOWARD.

# EXCHANGES

**This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.**

**These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.**

**Wanted**—Living cocoons of American Silk Moths: Luna, Cecropia Polyphemus, etc. Offered: Morphos, etc., in exchange or cash. Send particulars before sending.—A. Ford, 42, Irving Road, Bournemouth, Hampshire, England.

**For Exchange**—A large number of living cocoons of Actias selene, Philosamia cynthia, etc., in winter. Send for list.—Vee Kung Yu, c/o Bureau of Entomology, Kashing, Chekiang Province, China.

**Wanted**—Specimens of the genus **Pepsis** (Tarantula hawks) for a revision of the genus. Will name and return. H. T. Fernald, Amherst, Mass.

**For Exchange**—South American and Celebes butterflies by 100 monthly arrivals, also South and North American pupae and cocoons. Mrs. Emma Kessler, 499 Manhattan Ave., New York.

**Exchange**—Northern Idaho Lepidoptera to exchange for exotics or other showy specimens. C. W. Herr, Priest River, Idaho.

**Canarian Fauna**—For all particulars apply to H. E. Appenhagen, Sta Cruz, Teneriffe, Apartado No. 202.

**I am revising** the genus *Ceuthophilus* (Orthoptera, Tettigoniidae, Rhaphidophorinae), and will be glad to have material from any part of the country for study and determination. Specimens will be promptly returned.—Theodore H. Hubbell, Museum of Zoology, University of Michigan, Ann Arbor, Michigan.

**Lepidoptera** from all parts of the world in exchange for rarer Sphingidae, Saturnidae and Bombycidae from the Southern States and Mexico. Send lists of desiderata to Henry Wormsbacher, 1357 St. Charles Ave., Lakewood, Ohio.

**Wanted:** live pupae of large moths, especially Actias luna, by purchase or in exchange for silkworm eggs.—John H. Gerould, 36 Occom Ridge, Hanover, N. H.

**Western Lepidoptera:** Sphingidae, Aegeriidae, Cossidae, Catocala and the major Bombycidae in exchange for equally rare species of the same families. Short lists of the *very rare species* only, desired. O. C. Poling, Box 82, Fort Davis, Texas, U. S. A.

**Mycetophilidae**—Will exchange or identify material in this family. C. F. Adams, Indiana State Board of Health, Indianapolis, U. S. A.

**Wanted**—"Check List of the Lepidoptera of Boreal America" by Wm. Barnes and J. McDunnough. Kindly quote price. E. J. Dornfeld, 144 North Ave., Milwaukee, Wis.

**Wanted**—Moths of any species of the genus **Apantesis:** also eggs or larvae. Will determine specimens. Want to hear from anyone who will collect in this genus. Dr. E. T. Learned, Fall River, Mass.

**Wanted**—Names and addresses of collectors in foreign countries, also some second-hand insect cases. Write Mrs. Robert Milde, Lewiston, Minn.

**Catopini**—Catops (Choleva), Prionochaeta, Ptomaphagus. Wanted to borrow all possible specimens of these genera from North America for a revisional study. Correspondence solicited. Melville H. Hatch, Dept. of Zoology, Univ. of Wash., Seattle, Wash.

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